

ABSTRACT OF THE DISCLOSURE

The invention provides a method for forming a bottle-shaped trench. A semiconductor substrate having a trench and a pad stack layer formed thereon is provided. A masking 5 layer is then formed in the lower portion of the trench. Plasma nitridation is then performed to form a nitride layer covering the sidewalls of the trench, followed by removing the masking layer to expose the sidewalls of the trench. The lower portion of the trench is then expanded by etching 10 to form a bottle-shaped trench.